

CLAIMS

1. Method for transmission of radio data between at least two emitters and one receiver, using at least one data transmission multicarrier signal, the said multicarrier signal being formed from a sequence in time of symbols comprising firstly information data elements (10), and secondly reference elements called
5 pilots (11), distributed within the said information data elements according to a predetermined pattern, and for which the value during emission is known to the said receiver,

characterised in that at least two of the said emitters (31) use distinct pilot patterns (20, 21, 22), such that at any given moment and at any given frequency,
10 the said receiver can only receive one pilot (11) from the said emitters.

2. Method for transmission of radio data according to claim 1, characterised in that the said multicarrier signal is of the OFDM type.

3. Method for transmission of radio data according to any one of claims 1 and 2, characterised in that it uses at least three different pilot patterns.

15 4. Method for transmission of radio data according to any one of claims 1 to 3, characterised in that each of the said emitters uses a specific pilot pattern.

5. Method for transmission of radio data according to any one of claims 1 to 4, characterised in that it comprises a step for generation of the said pilot patterns using a generation function for which one parameter is an identifier of the
20 said associated emitter.

6. Method for transmission of radio data according to any one of claims 1 to 5, characterised in that the said process implements a step in which, for at least one of the said emitters, elements with practically zero energy are inserted in the said data elements of the said multicarrier signal, at locations in the time -
25 frequency space corresponding to the locations of the pilots of the said multicarrier signal emitted by at least another of the said emitters.

7. Method for transmission of radio data according to any one of claims 1 to 6, characterised in that the said pilots are emitted with a higher energy level than the said information data elements.

8. Method for transmission of radio data according to any one of claims 1 to 7, characterised in that said method is used in a cellular radio communication network, in that the said emitters are the base stations of the said network, and in that the said receiver is a mobile terminal.

5 9. Method for transmission of radio data according to any one of claims 1 to 8, characterised in that said method also transmits at least one control information transmission signal, so that notably the said receiver can identify the said emitter that emitted the data when it receives them.

10 10. Method for reception of data transmitted according to the transmission method according to any one of claims 1 to 9, characterised in that it comprises a step to determine the said pilot pattern used by the emitter of the said data.

11. Method for reception of data transmitted according to claim 10, characterised in that it comprises:

- 15 - a first step for reception of data transmitted by the said multicarrier data transmission signal;
- a second step to identify the emitter that emitted the said data, using said control information transmission signal;
- a third step to identify the said pilot pattern used by the said identified emitter.

20 12. Method for reception of data transmitted according to claim 11, characterised in that, when the said pilot pattern was generated using a generation function for which one parameter is an identifier of the said associated emitter, the said determination step uses the said generation function as a function of the said identified emitter.

25 13. Method for reception of data transmitted according to claim 10, characterised in that it comprises:

- a first step to receive data transmitted by the said multicarrier data transmission signal;
- a second step to determine the said pilot pattern used by the said emitter;
- 30 - a third step to identify the emitter that sent the said data, using the said determined pilot pattern.

14. Method for reception of data according to claim 13, characterised in that the said determination step analyses a correlation between the said data transmission multicarrier signal and at least one pattern in a list of predetermined patterns.

5 15. Method for reception of data according to any one of claims 10 to 14, characterised in that it also uses a step for extracting the said pilots from the said multicarrier data transmission signal, and a step for estimating the transfer function of a transmission channel associated with the said multicarrier signal.

10 16. Cellular radio communication system comprising at least two emitters and one receiver, using at least one multicarrier data transmission signal,

 the said multicarrier signal being formed from a time sequence of symbols composed firstly of information data elements and secondly of reference elements called pilots distributed within the said information data elements according to a predetermined pattern, and for which the value on emission is known to the said receiver,

15 characterised in that at least two of the said emitters comprise means of generating distinct pilot patterns, such that only one pilot can be received by the said receiver from the said emitters, at a given time and at a given frequency.

20 17. Base station of a cellular radio communication system comprising means of emitting data transmitted according to the transmission method according to any one of claims 1 to 9, characterised in that it comprises means of generating a pilot pattern using a generation function for which one parameter is an identifier of the said base station, such that two base stations with distinct identifiers generate two pilot patterns, which are also distinct.

25 18. Mobile in a cellular radio communication system, comprising means of receiving data transmitted according to the transmission method described in any one of claims 1 to 9, characterised in that it comprises:

 - means of receiving data transmitted by the said multicarrier data transmission signal;

30 - means of identifying the emitter that emitted the said data;

 - means of determining the said pilot pattern used by the said emitter.